



Biogas

Biogas: Climate protection with hot flame

Sewage gas and landfill gas are valuable sources of energy that are frequently not exploited. Like many biogenic gases, they are mostly composed of methane and therefore have an excellent capacity for thermal utilization.

In Germany alone landfill gas, which is released in the process of household waste decomposition at landfills, could replace around 1.3 million tons of fuel oil. In many cases the methane gas is simply burned off, often enough it escapes in uncontrolled manner into the air.

This not only means lack of exploitation of a valuable source of energy, but the climate also suffers. In the Earth's atmosphere methane accelerates the greenhouse effect. The colorless gas has a long half-life in high air layers and is around 25 times more harmful for the greenhouse effect than carbon dioxide.

Biogases have a high heating value and can be handled and combusted in a technically reliable manner.

In particular, they represent a calculable economic variable in times of uncertain energy markets and can replace fossil fuels (depending on volume) to a great extent.

If methane that previously went into the atmosphere is utilized, biogas combustion even has a double positive environmental balance. Methane, which is extremely harmful for the climate, is transformed into CO₂ while at the same time fossil fuels are saved.

Biogases can be burned reliably, efficiently and above all cleanly by means of SAACKE gas burners. The emission values are almost just as low as in the case of natural gas combustion.

However, biogas combustion places special demands on burner control:

If the composition of biogases fluctuates or the amount of biogas energy alone is not adequate for the downstream process, the control has to respond quickly and flexibly to fluctuating quantities and heating values under changing requirements.

The objective must be to always feed the maximum available biogas volume to the ongoing combustion process and only add as much precious natural gas or fuel oil as absolutely necessary.

SAACKE burner systems for biogas

Since biogas production does not always take place in a constant and calculable fashion even at modern waste water treatment plants, SAACKE also offers the following in addition to pure biogas burners:

- SAACKE burners for two-gas operation or even in combination with liquid fuels
 - SG/SKVG, for all applications, output 1 – 55 MW
 - TEMINOX GS/GLS for shell boilers and thermal oil heaters, output 4 – 25 MW
 - DDG, DDZG and TF-DDG/TF-DDZG for water tube boilers, output 6 – 126,8 MW
 - SSB for combustion chambers and special applications, output 2 – 100 MW
- Intelligent Electronical control technology (ESMR) for mixed firing systems in which biogas is always primarily burned and only the lacking energy is added via the conventional fuel
- Special gas trains for biogases with increased H₂S content.

By virtue of technology from SAACKE utilization of biogenic fuels represents a reliable, proven and highly available solution today. The increased expense for equipment pays off through optimal use of the generated biogases after a short time.

Depending on the configuration, it is also possible to combine equipment for burning biogases with other efficiency enhancement measures. This means efficiency can be increased further and valuable energy can be exploited even more effectively.

SAACKE has many years of experience with combustion and energetic utilization of sewage and landfill gases, such as from breweries and distilleries, from sugar and yeast factories, from potato processing and chemical processes as well as from treatment plants and landfills.

Mine gas ...

... from coal mining has a composition comparable to biogas and in principle can be utilized in exactly the same way. SAACKE also has many years of experience with energetic utilization of mine gas and offers proven technology.



Lost energy: waste gas flare of a landfill

Example of a plant

The following example illustrates thermal utilization of biogas in a paper plant.

Because the biogas volume fluctuates and covers only part of the total energy required, two burners are equipped with a mixing unit for natural gas and biogas and with intelligent EMSR technology. They can be operated either in mixed mode with biogas and natural gas or for purely natural gas operation in case no biogas is available at times.

Technical data

Application	4x double shell boiler; 50 t/h; 18.5 bar; 285 °C
Burner model	2x TEMINOX GLS (each boiler)
Burner output (max)	18 MW (each burner)
Natural gas	
Emission values	NO _x : 100 mg/m ³ CO: < 50 mg/m ³
Lower heating value (LHV)	36 MJ/m ³
Biogas	
Emission values	NO _x : 100 mg/m ³ CO: < 50 mg/m ³
Lower heating value (LHV)	18 – 26 MJ/m ³



Example of a paper plant: 8 burners, 4 boilers, 2 fuels



Methane producer: waste water treatment

For further information, please visit: www.saacke.com